

Status of Silicon Testing at Stony Brook

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View from outside the clean room.



Dry box (not connected to gas yet) with another clean room in the background.



Electronic equipment.

Current Electronic Equipment

Keithley 237 Source Measure Unit (SMU)

Voltage source: up to 1100V

PicoAmmeter

Agilent (HP) 4263B LCR Meter

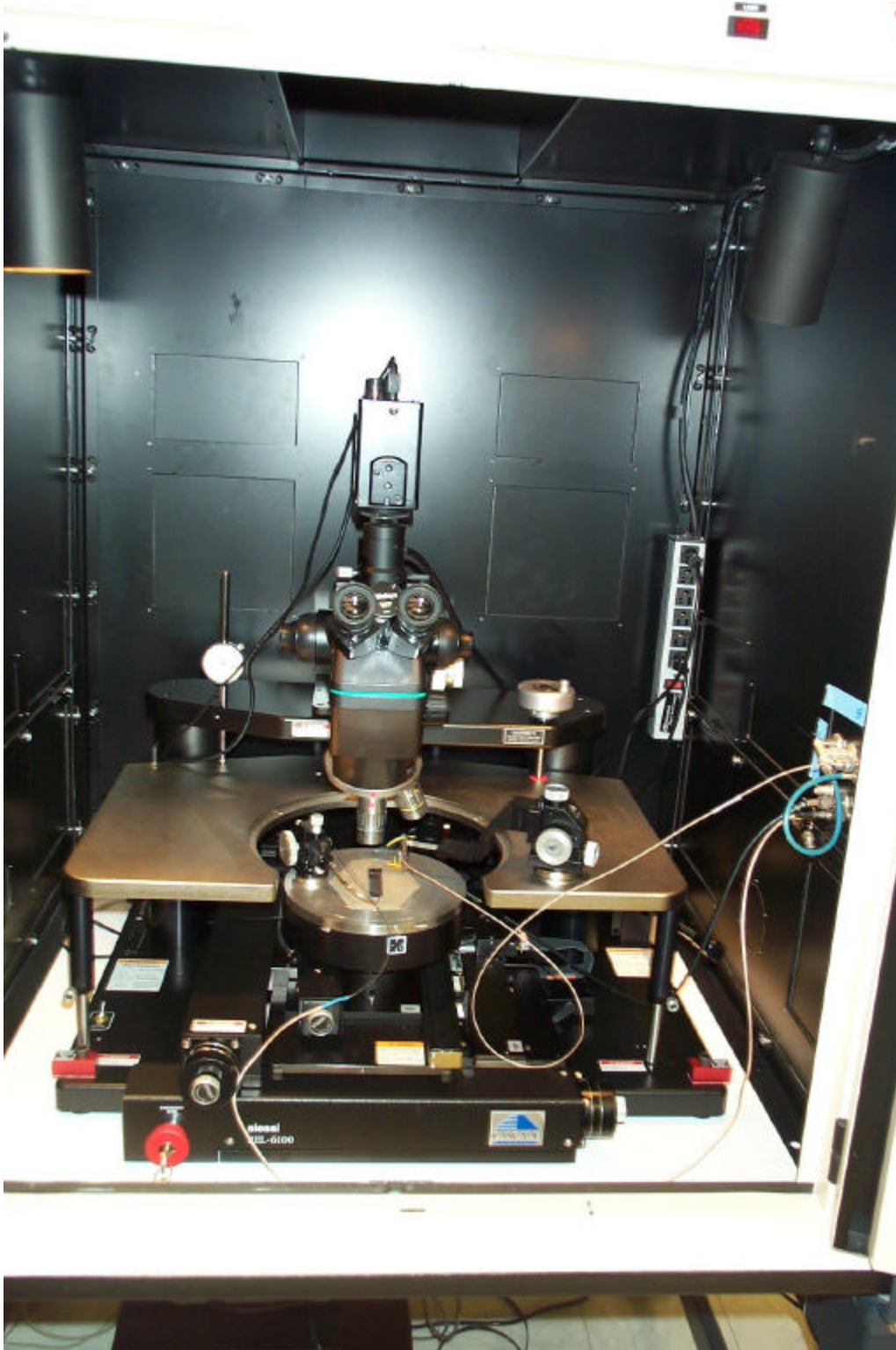
Measures C at $f = 100 \text{ Hz}, 1 \text{ kHz}, 10 \text{ kHz}, 100 \text{ kHz}$

Guard Box

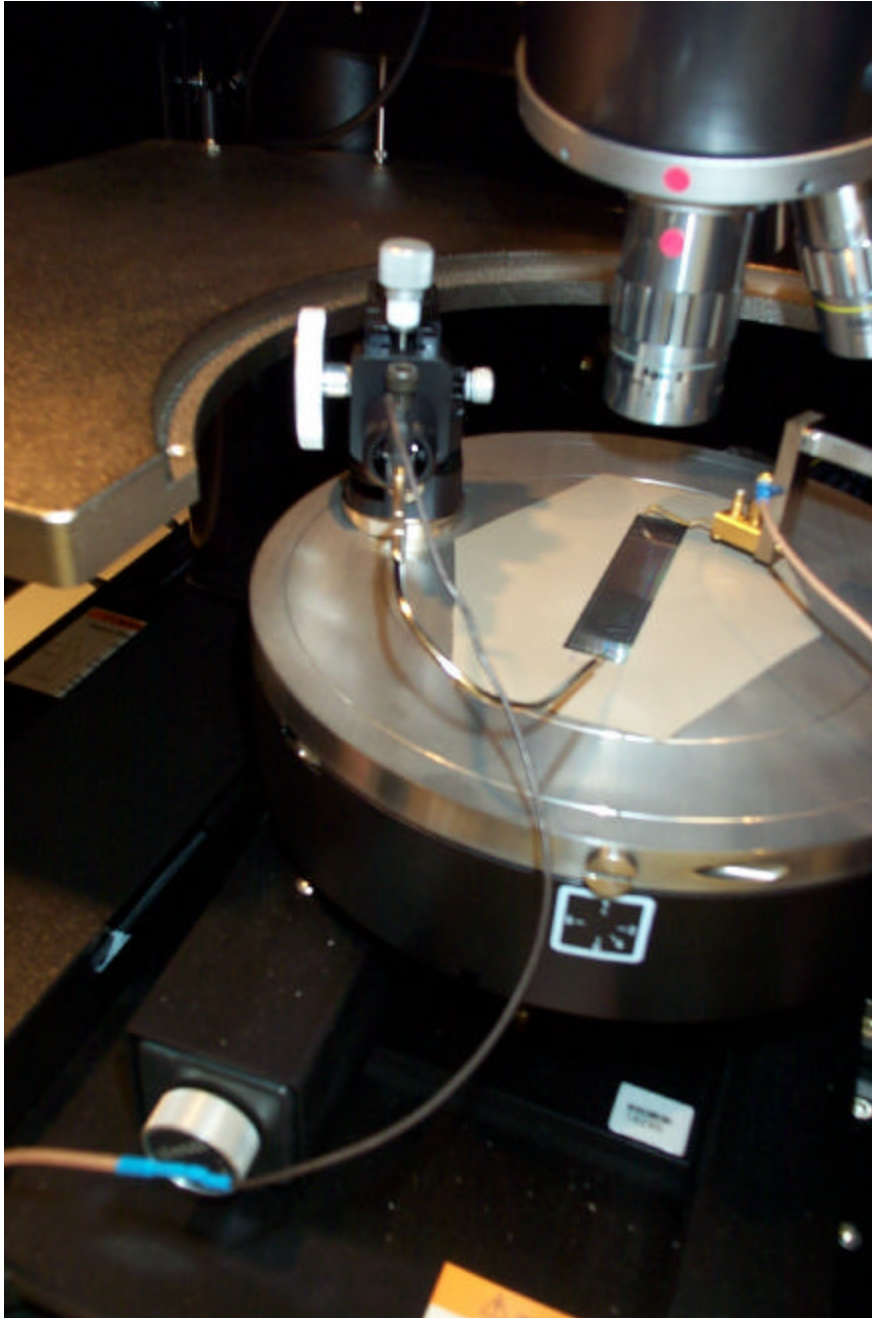
Filter to isolate the LCR meter from the SMU

Keithley 487 (2 of them)

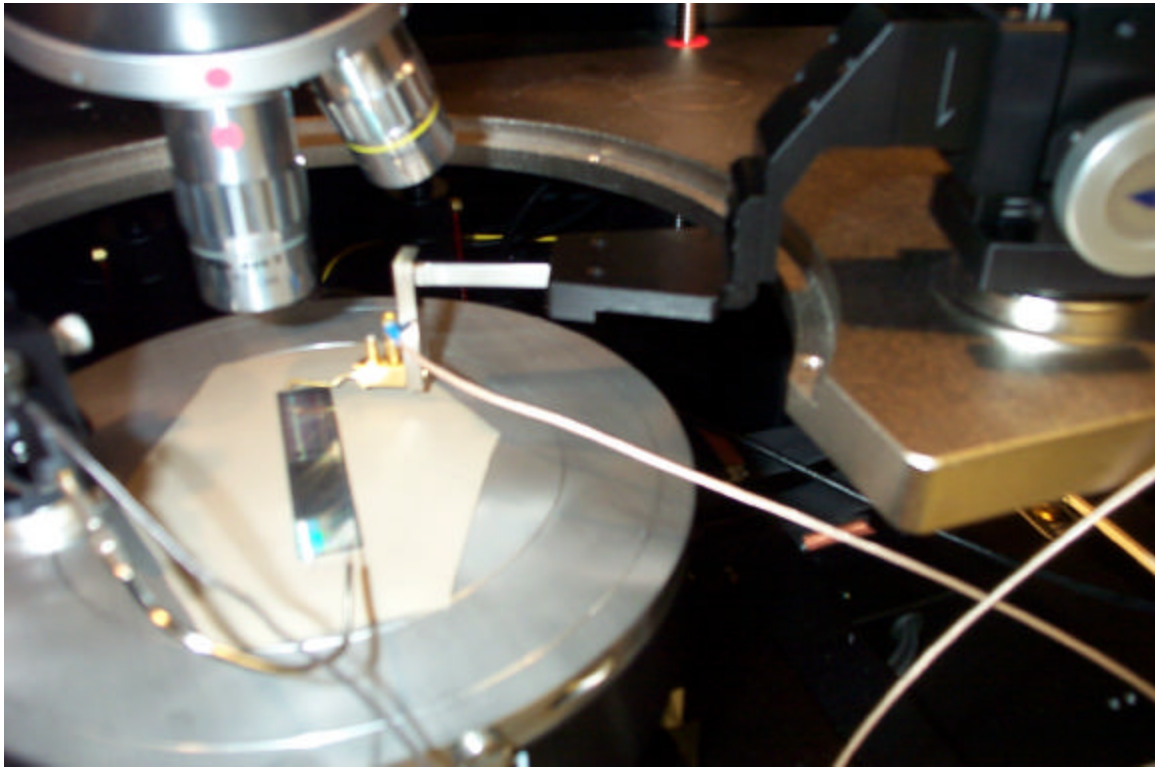
Picoammeter



Probe Station (Cascade Microtech REL-6100) in dark box

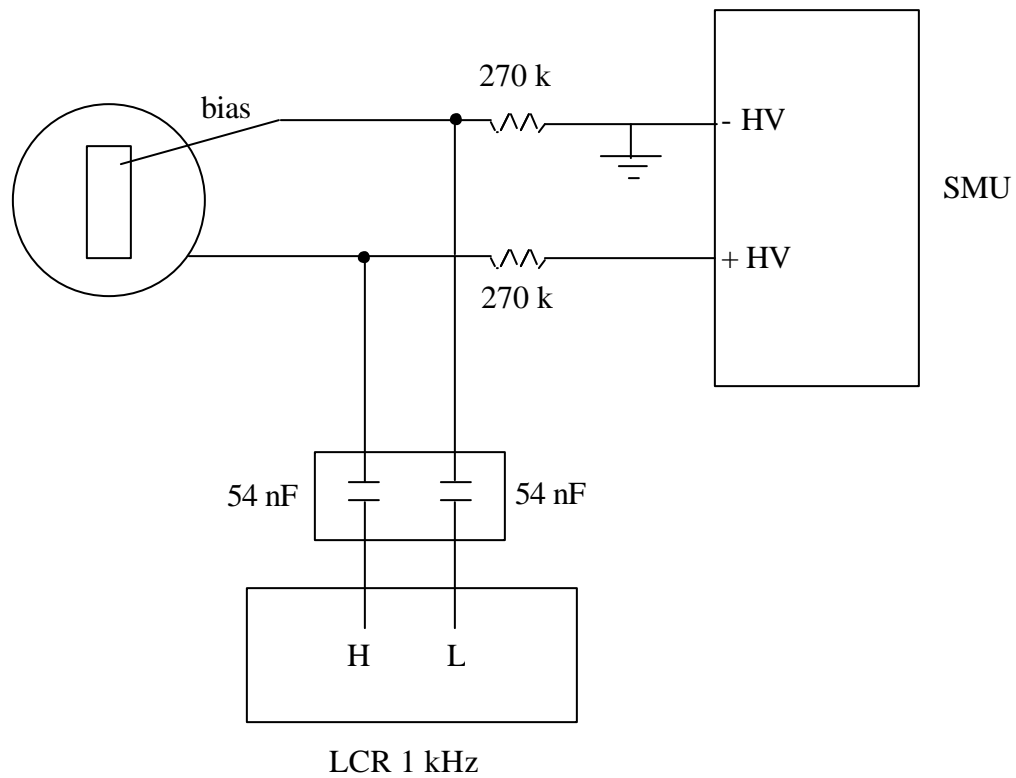


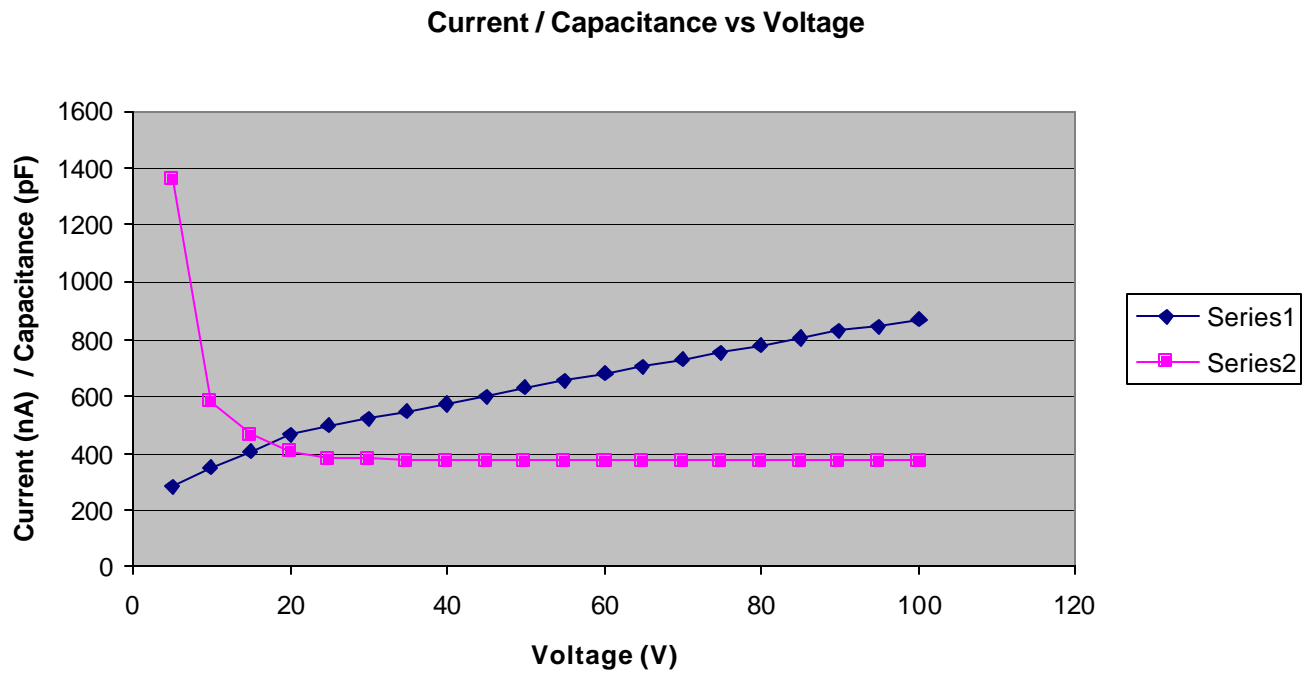
Little probe mounted ridiculously on chuck (magnetic base)
Big probes mounted on platen (magnetic base)
Conducting rubber and L0 sensor (236-7d1)



Big probe gets in the way of the microscope

I-V C-V Measurement





With proper filtering, measurements of I and C can be performed sequentially without recabling.

Current Status

Have successfully performed I-V and C-V measurements.

Other electrical measurements are similar so we think we can perform them.

Working on stepping through measurements of the AC pads. Then try DC pads. Currently not gentle enough, scratch the sensor.

Problems for Jack Steffens

Make a more gentle mount for the probe on the chuck.

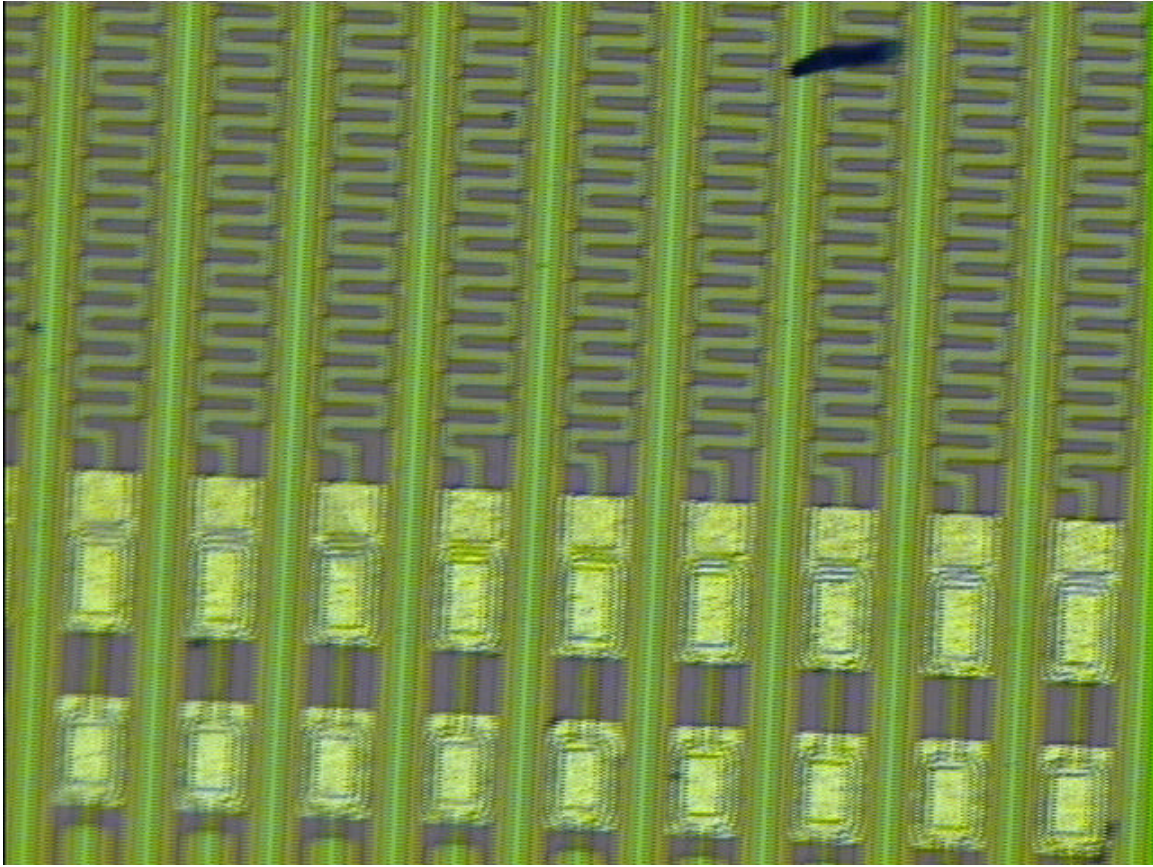
Get the big probe out of the way of the microscope.

Install humidity control in the clean room. (Currently $T = 74^{\circ}\text{C}$, $\text{RH} = 24\%$)

The conducting rubber is not flat, apparently.

Considering possibility of purchasing a probe card.

Status of the Microscope



works well on with all three magnifications

Have a video camera and can display images on line and use them in aligning the probe and the chuck.

Status of the Probe Station

Chuck is easy to align with Galaxy two point alignment procedure:

Define x-axis by the corners of first and last DC pads.

Stepping motors work well. Steps reproducible to about 1 μm .

Can step across 1 cm of pads with a cumulative error of a few μm .

But, AC scan program doesn't quite work yet.

ElectroStatic Discharge (ESD)

As I understand it, KSU does nothing special, but Fermilab grounds the arms of people working with sensors. We are planning to have ESD avoiding mats and ground the vacuum tweezers.

